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**Literature search results**

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**Search details**

Eosinophilic gastrointestinal disorder in infants/children

**Resources searched**

NHS Evidence; Cochrane Library; TRIP database, BNI, Cinahl, Medline, Embase.

*Database search terms*: eosinophilic gastrointestinal disorder, EGID, child, infant, children

*Google search string*: eosinophilic gastrointestinal disorder, children or child

**Summary**

The published research covers the period 2006 – 2011.

**Guidelines**

None found

**Evidence-based reviews**

None found

**Published research**

1. Effect of parental stress on management of childhood EGID
Abstract: Background: Eosinophilic Disorders (EGIDs) are chronic inflammatory diseases of the digestive tract that are associated with intensive treatment and poor health outcomes. EGIDs diagnosed in children require extensive parent involvement in disease management. Previous research on parental-caregiver stress (PCS) suggests that parents of children with chronic illnesses may report increased psychological distress, increased child health-care utilization (HCU), and decreased quality of life. PCS in EGIDs has not been studied empirically. This study aims to evaluate the relationship between PCS, child illness severity, and resulting HCU.

Methods: Parents of children with EGIDs were recruited via advertisement to diseasespecific support groups. Eligible participants completed a web-based survey which included: Pediatric Inventory for Parents (PIP) a measure of frequency and difficulty with PCS, demographics, child's symptom frequency, # of food allergies, treatments, and HCU. Separate stepwise linear regression and Factorial ANOVA assessed the relationship between PCS, child clinical data and HCU. Results: 175 parents participated. 98% were female/child's mother, (mean+/−SD) 38.5+/−7.1 yrs old, 93% Caucasian, 47% suburban dwellers, and 89% married. Children with EGIDs were 7.9+/−5.0 yrs old, 72% male, and had 13.6+/−7.5 food allergies. 45% have daily Sxs, 86% were on a restricted diet, 64% on 1-3 daily medications, and 72% had active disease. Mean time since Dx was 6.2+/−4.0 years. Stepwise regression showed that frequent PCS significantly predicts 27.4% of the variance in number of MD appts, 7% in the number of ER visits, and 8% in number of procedures. Frequent PCS related to interactions with medical providers and poorer emotional functioning significantly predicted increased MD visits, while communication challenges with family/friends predicted more ER visits and procedures. Flare frequency significantly predicted increased MD and ER visits. However when combined with frequency of PCS, flare frequency no longer significantly predicts increased HCU. All other clinical variables were not significant predictors. Factorial ANOVA revealed that only parents with 10 or more MD appts/yr reported significantly increased PCS frequency scores. All other differences were non-significant. Conclusions: Our preliminary study of the relationship between PCS and HCU demonstrated that frequency of parenting stress related to caring for a child with EGID is the most significant predictor of increased HCU. Child's illness severity was not a significant predictor of HCU when controlling for PCS. Understanding the role frequent parental stress may have in the care of children with EGIDs warrants further investigation.

Source: EMBASE
2. Dietary adherence in food allergic children with Eosinophilic Gastrointestinal Diseases

Author(s): Henry M., Atkins D., Pan Z., Ruybal J., Moore W., Furuta G.T.

Citation: Journal of Allergy and Clinical Immunology, February 2011, vol./is. 127/2 SUPPL. 1(AB107), 0091-6749 (February 2011)

Publication Date: February 2011

Abstract: RATIONALE: Identifying barriers to dietary adherence in food-allergic children is necessary for improving dietary counseling. The aim of this study was to identify barriers to and factors contributing to dietary adherence in a specific population of children with Eosinophilic Gastrointestinal Diseases. METHODS: An IRB approved self-administered questionnaire focusing on barriers to dietary adherence was administered to consenting participants at the American Partnership for Eosinophilic Disorders patient symposium in July 2010. RESULTS: Participants completing the questionnaire were primarily parents (93%) of food-allergic children (7% were adolescents). Results described the experiences of 45 children (69% males, ages 1-18 years) with multiple food allergies (96% with >1 food allergy). Self-reported levels of dietary adherence varied with 37% reporting not always following the diet. Adherence was not associated with the number of food allergies (NS). Most dietary instruction was provided by physicians (69%) and 44% did not receive any education from a dietitian. Patients who did not follow the diet tended to be older (NS) and not supported in school (p<0.027). Participants reported seeking diet support online (85%), through community (46%) and were least likely to seek support through their faith community (6%) or school (3%). Membership in support groups tended to correlate with dietary adherence (NS). CONCLUSIONS: A potential barrier to dietary adherence is absence of education from dietitians. Education from dietitians may be a potential avenue for improvement to care of food-allergic children.

Source: EMBASE
**gastrointestinal diseases (EGIDs)**

**Author(s):** Maune N.C., Furuta G.T., Atkins D., Henry M., Pan Z., Haas A.M.

**Citation:** Journal of Allergy and Clinical Immunology, February 2011, vol./is. 127/2 SUPPL. 1(AB105), 0091-6749 (February 2011)

**Publication Date:** February 2011

**Abstract:** RATIONALE: Previous reports identified FD as a presenting complaint of children with EGIDs but few determined the prevalence or characterized the exact symptoms of FD associated with EGIDs. The aim of this study was to identify key features of FD identified in a specific population of children with EGIDs. METHODS: An IRB approved self-administered caregiver questionnaire focusing on key features of FD was administered to consenting participants at the American Partnership of Eosinophilic Disorders (APFED) patient symposium on July 16-18, 2010. RESULTS: Questionnaires were completed by 33% of caregivers who enrolled in the symposium. Results from the questionnaire described experiences of 56 children (55% male, 45% female, ages 1-16 years of age). FD was reported as the primary presenting complaint in 58.9% of all children. Allergists were the first health care providers to evaluate 38% of children for symptoms that ultimately led to a diagnosis of EGIDs. Most commonly reported features of FD were vomiting (83.9%), low variety of intake (79.6%), and inconsistent patterns of eating (75%). Gastrostomy tube feedings were required in 34% of the children. Of 18 factors queried, use of a feeding tube correlated with low volume of intake (p<0.007), food refusal (p<.067), low variety of intake (p<.073), and difficulty swallowing (p<.078). CONCLUSIONS: Allergists are often the first health care provider to encounter children with EGIDs, with FD identified as an initial symptom. This study identifies an emerging profile of common, but subtle symptoms of FD in children with EGIDs that provide clinical cues for earlier disease recognition.

**Source:** EMBASE

1. Psychosocial functioning in children and adolescents with eosinophilic esophagitis (EoE) and their families

**Author(s):** Harris R.F., Riechers N., Furuta G.T., Atkins D., Klinnert M.D.

**Citation:** Journal of Allergy and Clinical Immunology, February 2011, vol./is. 127/2 SUPPL. 1(AB106), 0091-6749 (February 2011)

**Publication Date:** February 2011
Abstract: RATIONALE: Children with EoE face multiple psychosocial challenges. The psychological impact of living with this chronic disease is unknown. We describe psychosocial difficulties that were documented among children and their families referred for psychosocial evaluation. METHODS: Chart reviews were conducted for 93 patients who attended a clinic for EGID evaluation and received a psychosocial assessment by a psychologist or social worker. Reports were reviewed and rated for depression, anxiety, social functioning difficulties, sleep problems, overall psychological adjustment, and family coping. RESULTS: Patients were 1-18 yrs (x57.2, SD54.7), 78% male, and 91% from intact families. Diagnoses included EoE (60%), undiagnosed (26%), no EoE (12%), and other EGID (2%). Among children age 5 and older, 31% evidenced depression, 45% anxiety, and 19% social functioning difficulties. Children without diagnosis or with EoE ruled out were more likely to evidence depression than those with an EoE diagnosis (p<0.05). Sleep difficulties were present in 18% of the sample; 44% had adjustment difficulties. Child adjustment problems increased with age (p=0.003). Coping difficulties were noted in 47% of families; families of children age 0-4 had more difficulties coping than of children ages 8-18 (p<0.05). There was no difference between diagnostic groups in terms of psychological adjustment and family coping. CONCLUSIONS: Children referred to a tertiary care center for EGID evaluation have psychological and coping difficulties. Increased attention should be paid to this co-morbid aspect of these diseases. Future studies should incorporate standardized assessment instruments along with clinician judgment to determine the nature of support required for these children and their families.

Source: EMBASE


Author(s): Jones R

Citation: Nature Reviews Gastroenterology & Hepatology, November 2010, vol./is. 7/11(591), 1759-5045;1759-5053 (2010 Nov)

Publication Date: November 2010

Source: MEDLINE

6. Psychological Functioning of Children and Adolescents With Eosinophil-Associated Gastrointestinal Disorders.

Author(s): Cortina S, McGraw K, deAlarcon A, Ahrens A, Rothenberg ME, Drotar D

Citation: Children's Health Care, 01 October 2010, vol./is. 39/4(266-
Abstract: This study examined health-related quality of life (HRQOL) and adjustment among children with eosinophil-associated gastrointestinal disorders (EGID) compared with an age-matched sample without acute or chronic illness. Participants were youths aged 2 to 18 years. Children and caregivers completed measures of psychological symptoms and HRQOL. Significant group differences were found for child report of depressive, as well as anxiety, symptoms. Significant group differences were also found for caregiver report of psychological symptoms and social skills. Finally, based on parent and youth report, HRQOL and greater school absenteeism were associated with EGID diagnosis.

Source: CINAHL


Citation: Pediatrics, 01 September 2010, vol./is. 126/3(0-), 00314005

Abstract: OBJECTIVES: Feeding dysfunction (FD) seen in younger children with eosinophilic gastrointestinal disease (EGID) has not been well described. Thus, our aim was to further characterize FD in children with EGIDs. METHODS: A retrospective medical record analysis of 200 children seen over 12 months in a multidisciplinary Gastrointestinal Eosinophilic Diseases Program was performed. The clinical data of 33 children identified as also having FD were examined, including information obtained by history, physical examination, feeding evaluation, review of nutritional data, allergy testing and histologic assessment of mucosal biopsies. RESULTS: Of 200 children with EGIDs, 16.5% had significant FD. The median age of this group was 34 months (range: 14-113 months). A variety of learned maladaptive feeding behaviors were reported in 93.9%. Frequent gagging or vomiting occurred in 84.8%. Food sensitivity was documented in 88% while 52% had other allergic disease. Twenty one percent were diagnosed with failure to thrive and 69.7% required individual or group feeding therapy. Forty-two percent had residual eosinophilia of >15 per HPF on esophageal biopsies performed at the time of symptoms. CONCLUSIONS: FD is prevalent in children with EGIDs often presenting as maladaptive learned feeding behaviors with altered mealtime dynamics and physical difficulties in eating mechanics. FD can persist even after
eosinophilic inflammation is successfully treated. Awareness of the increased prevalence of FD in children with EGIDs with enable earlier recognition of this problem, resulting in a comprehensive, individualized treatment plan with the desired outcome of improving the development, feeding, and nutrition of these children.

**Source:** CINAHL

**Full Text:**

Available in fulltext at [American Academy of Pediatrics](#)

Available in fulltext at [Highwire Press](#)

8. **GI eosinophilia in paediatrics**

**Author(s):** Walker M.

**Citation:** Virchows Archiv, August 2010, vol./is. 457/2(103), 0945-6317 (August 2010)

**Publication Date:** August 2010

**Abstract:** Eosinophils are powerful innate immune cells home to the gastrointestinal tract and play a major role in both host immunity to luminal pathogens and maintenance of homeostasis of intestinal epithelium in the normal gastrointestinal tract (GIT). Normal numbers at different GIT sites are defined in children. However, if in excess, eosinophils may play a key role in the pathogenesis of disease of the GIT, including primary eosinophilic gastrointestinal disease (EGIDs). Data from the World Wide Web-based registry of EGIDs show that these have a strong genetic and allergic component, 80% having coexistent atopic disease, 62% food sensitisation and 16% with a family member with similar disorders. The most studied EGID in children is eosinophilic oesophagitis; symptoms include feeding intolerance and GERD symptoms. Endoscopy shows a characteristic linear furrowing, and histological features include >= 15 eosinophils/1 HPF (peak count). There is a male preponderance and an allergic and genetic component. Around 7-8% of children are affected by food allergy, most commonly cow's milk allergy and egg and peanut allergies which may manifest as eosinophil-induced GI disorders. Eosinophilic gastroenteritis is manifest as allergic eosinophilic gastroenteritis, allergic proctocolitis and food protein-induced enterocolitis syndrome (FPIES). Eosinophilia is also seen in helminth infection, inflammatory bowel disease, coeliac disease and graft vs. host disease where eosinophil density can correlate with disease severity. Recent work has implicated duodenal eosinophilia in functional conditions, particularly paediatric dyspepsia, with success in treatment aimed at the eosinophil-mast cell axis.
9. Feeding dysfunction in pediatric Eosinophilic Gastrointestinal Diseases

Author(s): Mukkada V.A., Maune N.C., Haas A., Petersburg S., Moore W., Fleischer D.M., Furuta G.T., Atkins D.

Citation: Gastroenterology, May 2009, vol./is. 136/5 SUPPL. 1(A283), 0016-5085 (May 2009)

Publication Date: May 2009

Abstract: Rationale-Esophageal inflammation leads to different symptom complexes in adults and children. Adults and adolescents with eosinophilic esophagitis (EoE) present with well defined complaints of dysphagia and food impaction, whereas younger children present with a wide variety of vague symptoms including feeding difficulties. To date, no studies have described clinical features associated with feeding difficulties in children with EoE. We hypothesize that because of chronic esophageal inflammation, children with EoE have a high incidence of feeding dysfunction. The aim of our study was to describe clinical characteristics of feeding disorders in children with EoE. Methods-We performed a retrospective chart review of all children evaluated by feeding specialists during an 18 month period in a tertiary care subspecialty EoE/allergy program. Charts were reviewed to determine whether evidence of feeding dysfunction was present, based on 25 specific criteria determined by the feeding specialists. The charts of children who did not meet diagnostic criteria for EoE or who had other conditions causing feeding dysfunction, such as major neurologic or cardiac impairment, were not reviewed. Results-Of 200 patients reviewed, 25 children with EoE and 8 with other Eosinophilic Gastrointestinal Diseases (EGIDs) (average 3.5 years, range from 14 months to 9.5 years) demonstrated significant feeding dysfunction (Table 1). It is important to note that not all patients referred to the program are found to have an EGID. In this group of patients with both EGIDs and significant feeding dysfunction, there was a high proportion (72.7%) with multiple food allergies (defined by symptoms in conjunction with multiple positive skin prick and/or food-specific IgE tests. ConclusionsChildren with EoE are at high risk to develop maladaptive learned behaviors surrounding mealtimes and eating. Although dysphagia is a common presentation in adults and adolescents, here we document a low prevalence of dysphagia that may be explained by inadequate language skills, preference for an immature diet, or an early stage of the disease. SpeculationFeeding skill development and overall growth and nutrition may be negatively impacted by EGIDs and food allergy. Early screening for feeding dysfunction is critical to the overall care of these children. (Table presented).
10. Eosinophilic gastrointestinal disorders.

Author(s): Assa’ad A

Citation: Allergy & Asthma Proceedings, January 2009, vol./is. 30/1(17-22), 1088-5412;1088-5412 (2009 Jan-Feb)

Publication Date: January 2009

Abstract: Eosinophilic gastrointestinal disorders (EGID) are frequently encountered by the practicing allergist/immunologist. This is due to the occurrence of the disorders in atopic subjects and because research has indicated that atopy-related genes, inflammatory cells, and mediators play a role in the pathogenesis of the disorders. The role of the allergist/immunologist includes making the diagnosis by eliciting the symptoms in the history and defining the atopic phenotype of the subject with regard to food and environmental allergens, using skin testing and possibly patch tests. Obtaining a tissue diagnosis with an esophagogastroduodenoscopy is essential for the diagnosis and may direct treatment with topical steroids, diet, or novel therapeutic agents, e.g., anti-IL-5 monoclonal antibodies. The allergist/immunologist also contributes to the management and design of therapeutic interventions and the long-term follow-up of the patients. This is important because the EGID have a chronic course marked by resolutions and relapses. This review takes a practical approach to the identification and management of the EGID by the allergist/immunologist.

Source: MEDLINE

Full Text:

Available in fulltext at EBSCO Host

11. Allergy and eosinophil-associated gastrointestinal disorders (EGID).
Author(s): DeBrosse CW, Rothenberg ME

Citation: Current Opinion in Immunology, December 2008, vol./is. 20/6(703-8), 0952-7915;1879-0372 (2008 Dec)

Publication Date: December 2008

Abstract: Eosinophil-associated gastrointestinal disorders (EGIDs) are characterized by an inappropriate accumulation of eosinophils within the gastrointestinal tract. The underlying etiology and pathophysiology that lead to the development of EGID are far from elucidated. However, there is growing evidence to support the role of aeroallergens and food allergens in the pathogenesis of these disorders. Recent advances have highlighted the role of Th2-driven cytokines in the development of EGID, and clinical studies have verified that children and adults with EGID often have positive skin testing to food allergens. The most common form of EGID, eosinophilic esophagitis (EE), has garnered intense investigation following an increased recognition over the past decade. Recently, there have been several important studies providing insight into both the cellular mechanisms governing EE and clinical therapies directed toward the treatment of EE. In the article herein, we will review the most recent scientific advances influencing our understanding of EGID with special emphasis on the role of allergens in the pathogenesis of EGID.

Source: MEDLINE

12. Idiopathic eosinophilic disorders of the gastrointestinal tract in children

Author(s): Mukkada V.A., Furuta G.T.

Citation: Best Practice and Research: Clinical Gastroenterology, June 2008, vol./is. 22/3(497-509), 1521-6918 (Jun 2008)

Publication Date: June 2008

Abstract: Over the last decade, eosinophilic gastrointestinal diseases have emerged as increasingly recognised diseases affecting both adults and children. While the exact morbidity is uncertain, it has become evident that they carry a significant cost to affected patients. Recent investigations shed light on basic mechanisms of eosinophilic recruitment and inflammation, and suggest a critical role for Th2 cytokines, such as eotaxin, and allergen exposure in their pathogenesis. Eosinophilic oesophagitis (EO) is the best characterised of these diseases, and improved understanding of its basic biology stimulated development of new treatment regimens. Current evidence supports the use of elemental diets and systemic or topical corticosteroids to treat EO. A major clinical problem is the fact that most patients relapse when medical treatment is discontinued, thus making nutritional management an
attractive long term option. Many areas remain unanswered in the management of patients with EGIDs, including identification of optimal treatment protocol, development of appropriate non-invasive monitoring, and choice of appropriate therapeutic endpoints. 2007 Elsevier Ltd. All rights reserved.

Source: EMBASE


Author(s): Maloney J, Nowak-Wegrzyn A

Citation: Pediatric Allergy & Immunology, June 2007, vol./is. 18/4(360-7), 0905-6157;0905-6157 (2007 Jun)

Publication Date: June 2007

Abstract: Cow's milk protein allergy is the most common food allergy in infants and young children. It is estimated that up to 50% of pediatric cow's milk allergy is non-IgE-mediated. Allergic proctocolitis is a benign disorder manifesting with blood-streaked stools in otherwise healthy-appearing infants who are breast- or formula-fed. Symptoms resolve within 48-72 h following elimination of dietary cow's milk protein. Most infants tolerate cow's milk by their first birthday. Food protein-induced enterocolitis syndrome presents in young formula-fed infants with chronic emesis, diarrhea, and failure to thrive. Reintroduction of cow's milk protein following a period of avoidance results in profuse, repetitive emesis within 2-3 h following ingestion; 20% of acute exposures may be associated with hypovolemic shock. Treatment of acute reactions is with vigorous hydration. Most children become tolerant with age; attempts of re-introduction of milk must be done under physician supervision and with secure i.v. access. Allergic eosinophilic gastroenteritis affects infants as well as older children and adolescents. Abdominal pain, emesis, diarrhea, failure to thrive, or weight loss are the most common symptoms. A subset of patients may develop protein-losing enteropathy. Fifty percent of affected children are atopic and have evidence of food-specific IgE antibody but skin prick tests and serum food-IgE levels correlate with response to elimination diet poorly. Elemental diet based on the amino-acid formula leads to resolutions of gastrointestinal eosinophilic inflammation typically within 6 wk.

Source: MEDLINE
14. **Eosinophil Function in Eosinophil-associated Gastrointestinal Disorders.**

**Author(s):** Hogan SP, Rothenberg ME

**Citation:** Current Allergy & Asthma Reports, February 2006, vol./is. 6/1(65-71), 1529-7322;1529-7322 (2006 Feb)

**Publication Date:** February 2006

**Abstract:** Eosinophil-associated gastrointestinal disorders (EGIDs) are characterized by a rich eosinophilic inflammation of the gastrointestinal tract in the absence of known causes for eosinophilia or other gastrointestinal disorders. These disorders include eosinophilic esophagitis, eosinophilic gastritis, eosinophilic gastroenteritis, eosinophilic enteritis, and eosinophilic colitis, and are being recognized with increasing frequency. Clinical studies suggest that eosinophils have a pathogenic role in EGID; however, the function of eosinophils in these disorders remains an enigma. In this review, we briefly describe the clinical features of EGID of the esophagus, small bowel, and colon. We summarize recent experimental analysis examining the underlying contribution of eosinophils to disease pathogenesis and discuss possible therapeutic approaches for the treatment of these diverse diseases.

**Source:** MEDLINE